

Meeting the Challenge: Technological Advances in Stroke Rehabilitation

MossRehab Symposium

June 1, 2012

MossRehab is a renowned physical and cognitive rehabilitation center. It is among *U.S. News & World Report's* top ten rehabilitation facilities in the country and is the top-ranked facility of its type in Pennsylvania. Every year MossRehab treats more than 2,400 inpatients at its six inpatient locations, including the flagship 130-bed facility in Elkins Park, and provides care for more than 140,000 outpatients at 14 locations throughout the Greater Delaware Valley.

Established in 1959, MossRehab is committed to care, to minimizing the effects of disability, and to enhancing the independence of the individuals it serves. Part of MossRehab's commitment is evidenced by its drive to educate and provide the most technologically advanced care possible.

MossRehab is a center of research and therapeutic use of rehabilitation interventions that make use of robotic and computerized technology for patients with stroke. The Moss Rehabilitation Research Institute (MRRI) sponsors interdisciplinary research aimed at improving human function and adaptation to disability. Survivors of stroke often live with significant disabilities. Through research, MRRI scientist's findings form the basis for new treatment approaches used at MossRehab and many other facilities. Patients have the opportunity to participate in various studies and have access to some of the latest findings regarding the use of these technologies in stroke rehabilitation. The growing use of robotic and computerized technology in neuro-rehabilitation promises a brighter future for patients who have residual deficits due to stroke. Progress is being made to help patients regain speech, reacquire use of impaired extremities and relearn the basic tasks needed for everyday living.

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Highlights of the topics covered by MossRehab staff during this year's symposium included:

Aphasia Rehabilitation: Using State-of-the-Art Technology to Enhance Treatment Outcomes and Communicate Effectiveness.
Ruth Fink, MA, CCC-SLP

The focus of this presentation was the software program developed by MossRehab researchers and clinicians called MossTalk Words®.¹

RELEAS™ To Promote Functional Integration of the Hemiparetic Hand During Activities of Daily Living
Joseph R. Padova, OTR/L

The RELEAS™ helps restore hand function for those who have lost the ability to open and close a hand due to a stroke or other neurological problems.

Interventions for Neglect: Prism and Mirror Therapy
Jaun May, MOT, OTR/L

This presentation focused on the MossRehab Research Institute and the Right Hemisphere Stroke Center's use of prism and mirror therapy to address neglect.

Technology to Extend Mental Health Treatment for Stroke Survivors
Paul Bach, PhD and Claire McGrath, PhD

In response to growing need, an innovative mental health service provided through the new Neuro Mental Health Outpatient Clinic, a collaborative effort between Belmont Behavioral Health and MossRehab, was developed.

The G-EO Evolution System: New Body Weight Support Device For Gait and Stair Climbing Training in Stroke
Michael Parlatore, PT, DPT, and Theresa Toczykowski, MPT

The G-EO Evolution System, a new body weight supported robotic device, designed to simulate both gait and stair performance of the neurologic population, is effective in the rehabilitation of stroke patients.²

Use of Tibion in the Acute Rehab Setting
Sarah Godlewski, MSPT

The Tibion is a non-invasive battery powered dynamic device which supplements muscle strength, provides sensory input, assists mobility, and provides force transfer in response to limb loading and knee movement.²

Using Fiberoptic Endoscopic Evaluation of Swallowing (FEES) for Management of Dysphagia in the Stroke Population
Stephanie Dunn, MS, CCC-SLP

FEES allows the evaluation of the structures and function of the upper aero-digestive tract, making it a perfect diagnostic tool for use in the evaluation of dysphagia in stroke patients.

Neuromuscular Electrical Stimulation: VITALSTIM® as an Adjunct to Dysphagia Therapy
Jody Goldsborough, MA, CCC-SLP

VitalStim®, a neuromuscular electrical stimulation modality, is an FDA-approved device specifically designed for use with patients with dysphagia.

The use of robotic and computerized technology enables individuals to make very precise repeatable movements. The intention is to increase the intensity of the intervention, which improves the effectiveness of treatment while reducing potential injuries for therapists. Robotic devices have a clear edge over manual therapy in that they enable the repetition of exact movements while avoiding variations due to fatigue, spasm or pain in the patient as well as fatigue or distraction in the therapist. It is this consistency that is the key for effective rehabilitation. Researchers at MossRehab are actively studying the efficacy and safety of these technologies in neuro-rehabilitation. Research findings suggest that their use in rehabilitation boosts the performance levels of those with chronic stroke, showing that patients with long-standing dysfunction can respond effectively even after long periods of time. As technology continues to progress and proliferate, robotic and computer-assisted therapy will become an integral part of the care we provide.

These advances were the driving force behind the focus of this year's stroke symposium, entitled, "Meeting the Challenge: Technological Advances in Stroke Rehabilitation." The educational objective was for participants to gain a better understanding of the technologies available and to recognize the criteria for their use and implementation in the stroke rehabilitation population. Attended by over 125 professionals, the symposium showcased the most advanced technology available in rehabilitative care and innovations created by members of MossRehab's own staff.

MossRehab is committed to offering the highest level of clinical service and dedicated to moving the field of medical rehabilitation forward through research, advocacy and education. MossRehab believes that the sharing of knowledge with other caregivers, professional and non-professional alike, is imperative if we are to provide the highest quality care for persons

with stroke. For these reasons MossRehab is delighted to share its discoveries, innovations and knowledge with other professionals and the community at large. ■

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*For more information on MossRehab,
educational opportunities or
assistance with patient care you
may visit www.MossRehab.org
or 1-800-CALL-MOSS.*

REFERENCES

1. Fink R, Brecher A, Sobel P, Scharz M. Computer-assisted treatment of word retrieval deficits in aphasia. *Aphasiology*. 2005;19(10-11):943-954.
2. Esquenazi A, Packel A. Robotic-assisted gait training and restoration. *Am J Phys Med & Rehabil*. 2012; 91(11):S217-S231.